Generator Systems

30,000 Watt Generator System

Model 076080

Operator's Manual

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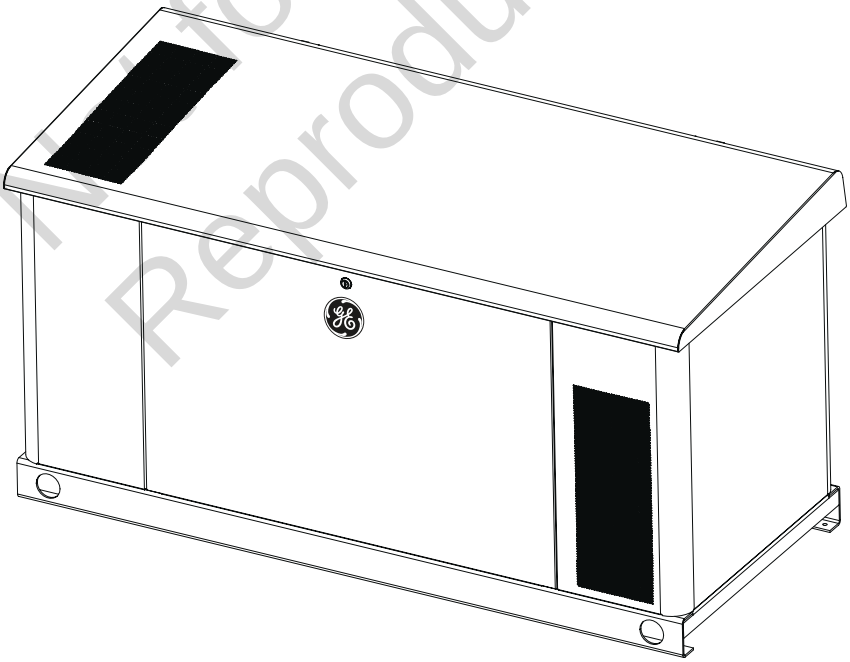

This generator is rated in accordance with UL (Underwriters Laboratories) 2200 (stationary engine generator assemblies) and CSA (Canadian Standards Association) standard C22.2 No. 100-4 (motors and generators).

Thank you for purchasing this quality-built GE generator. We're pleased that you've placed your confidence in the GE brand. When operated and maintained according to the instructions in this manual, your generator will provide many years of dependable service.

This manual contains safety information to make you aware of the hazards and risks associated with standby generators and how to avoid them. Because we do not necessarily know all the applications this equipment could be used for, it is important that you read and understand these instructions thoroughly before attempting to start or operate this equipment. **Save these instructions for future reference.**

This generator requires professional installation before use. Refer to the separate installation manual for full information. Your installer should follow the instructions completely.

Where to Find Us

You never have to look far to find GE support and service for your generator. For quick service when you need it, keep your original receipt with this manual. You may contact Customer Service at **888-575-8226** between 8:00 AM and 5:00 PM CT, or click on SERVICE & SUPPORT at www.standbygeneratorsystems.com, which provides a list of authorized dealers.

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Safety Rules

Important Safety Instructions

SAVE THESE INSTRUCTIONS - This manual contains important instructions that should be followed during installation and maintenance of the generator and batteries.

Safety Symbols and Meanings

Explosion

Fire

Electrical Shock

Toxic Fumes

Rotating Parts

Hot Surface

Auto Start

Explosive Pressure

Chemical Burn

Rotating Belt/Pulley

Rotating Fan Blade

Exploding Battery

Lift Hazard

Read Manual

⚠ The safety alert symbol indicates a potential personal injury hazard. A signal word (DANGER, WARNING, or CAUTION) is used with the alert symbol to designate a degree or level of hazard seriousness. A safety symbol may be used to represent the type of hazard. The signal word NOTICE is used to address practices not related to personal injury.

⚠ **DANGER** indicates a hazard which, if not avoided, *will* result in death or serious injury.

⚠ **WARNING** indicates a hazard which, if not avoided, *could* result in death or serious injury.

⚠ **CAUTION** indicates a hazard which, if not avoided, *could* result in minor or moderate injury.

NOTICE addresses practices not related to personal injury.

The manufacturer cannot possibly anticipate every possible circumstance that might involve a hazard. The warnings in this manual, and the tags and decals affixed to the unit are, therefore, not all-inclusive. If you use a procedure, work method or operating technique that the manufacturer does not specifically recommend, you must satisfy yourself that it is safe for you and others. You must also make sure that the procedure, work method or operating technique that you choose does not render the generator system unsafe.

⚠ **WARNING** Running engine gives off carbon monoxide, an odorless, colorless, poison gas.

Breathing carbon monoxide could result in death, serious injury, headache, fatigue, dizziness, vomiting, confusion, seizures, nausea or fainting.

- Operate this product ONLY outdoors in an area that will not accumulate deadly exhaust gas.
- Keep exhaust gas away from any windows, doors, ventilation intakes, soffit vents, crawl spaces, open garage doors or other openings that can allow exhaust gas to enter inside or be drawn into a potentially occupied building or structure.
- Carbon monoxide detector(s) MUST be installed and maintained indoors according to the manufacturer's instructions/ recommendations. Smoke alarms cannot detect carbon monoxide gas.

⚠ **WARNING** The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

⚠ **WARNING** Certain components in this product and related accessories contain chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm. Wash hands after handling.

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⚠ WARNING Storage batteries give off explosive hydrogen gas during recharging.

Slightest spark will ignite hydrogen and cause explosion, resulting in death or serious injury.

Battery electrolyte fluid contains acid and is extremely caustic. Contact with battery contents could cause severe chemical burns. A battery presents a risk of electrical shock and high short circuit current.

- DO NOT dispose of battery in a fire. Recycle battery.
- DO NOT allow any open flame, spark, heat, or lit cigarette during and for several minutes after charging a battery.
- DO NOT open or mutilate the battery.
- Wear protective goggles, rubber apron, rubber boots and rubber gloves.
- Remove watches, rings, or other metal objects.
- Use tools having insulated handles.

⚠ WARNING Propane and Natural Gas are extremely flammable and explosive, which could cause burns, fire or explosion resulting in death or serious injury.

- Install the fuel supply system according to NFPA 37 and other applicable fuel-gas codes.
- Before placing the generator into service, the fuel system lines must be properly purged and leak tested.
- After the generator is installed, you should inspect the fuel system periodically.
- NO leakage is permitted.
- DO NOT operate engine if smell of fuel is present or other explosive conditions exist.
- DO NOT smoke around the generator. Wipe up any oil spills immediately. Ensure that no combustible materials are left in the generator compartment. Keep the area near the generator clean and free of debris.

⚠ WARNING Generator produces hazardous voltage. Failure to properly ground generator could result in electrocution.

Failure to isolate generator from utility power could result in death or serious injury to electric utility workers due to backfeed of electrical energy.

- DO NOT touch bare wires or bare receptacles.
- DO NOT use generator with electrical cords which are worn, frayed, bare or otherwise damaged.
- DO NOT handle generator or electrical cords while standing in water, while barefoot, or while hands or feet are wet.
- If you must work around a unit while it is operating, stand on an insulated dry surface to reduce the risk of a shock hazard.
- DO NOT allow unqualified persons or children to operate or service generator.
- In case of an accident caused by electrical shock, immediately shut down the source of electrical power and contact the local authorities. **Avoid direct contact with the victim.**
- Despite the safe design of the generator, operating this equipment imprudently, neglecting its maintenance or being careless could cause possible injury or death.
- Remain alert at all times while working on this equipment. Never work on the equipment when you are physically or mentally fatigued.
- Before performing any maintenance on the generator, disconnect the battery cable indicated by a **Negative** (**NEG** or **-**) first. When finished, reconnect that cable last.
- After your system is installed, the generator may crank and start without warning any time there is a power failure. To prevent possible injury, always set the generator's system switch to **OFF**, remove the service disconnect from the disconnect box AND remove the 15 Amp fuse BEFORE working on the equipment.

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⚠ WARNING Exhaust heat/gases could ignite combustibles or structures resulting in death or serious injury. Contact with muffler area could cause burns resulting in serious injury.

- DO NOT touch hot parts and AVOID hot exhaust gases.
- Allow equipment to cool before touching.
- Exhaust outlet side of weatherproof enclosure must have at least 5 ft. (1.5m) minimum clearance from any structure, shrubs, trees or any kind of vegetation.
- Standby generator weatherproof enclosure must be at least 5 ft. (1.5m) from windows, doors, any wall opening, shrubs or vegetation over 12 inches (30.5 cm) in height.
- Standby generator weatherproof enclosure must have a minimum of 5 ft. (1.5 m) overhead clearance from any structure, overhang, or trees.
- DO NOT place weatherproof enclosure under a deck or other type of structure that may confine airflow.
- Use only flexible fuel line provided. Connect provided fuel line to generator. DO NOT use with or substitute any other flexible fuel line.
- Smoke detector(s) MUST be installed and maintained indoors according to the manufacturer's instructions/recommendations. Carbon monoxide alarms cannot detect smoke.
- Keep at least minimum distances shown in *General Location Guidelines* to insure for proper generator cooling and maintenance clearances.
- Replacement parts must be the same and installed in the same position as the original parts.

⚠ WARNING Moving parts could crush and cut. Starter and other rotating parts could entangle hands, hair, clothing, or accessories resulting in serious injury.

- NEVER operate generator without protective housings, covers, or guards in place.
- DO NOT wear loose clothing, jewelry or anything that could be caught in the starter or other rotating parts.
- Tie up long hair and remove jewelry.
- Before servicing, remove 15 Amp fuse from control panel and disconnect **Negative** (**NEG** or **-**) battery cable.

⚠ WARNING Hot pressurized coolant could cause serious injury.

- DO NOT open radiator cap when hot.
- Before servicing, allow coolant to cool.

⚠ CAUTION Installing the 15 Amp fuse could cause the engine to start at any time without warning resulting in minor or moderate injury.

- Observe that the 15 Amp fuse has been removed from the control panel for shipping.
- DO NOT install this fuse until all plumbing and wiring has been completed and inspected.

⚠ CAUTION Excessively high operating speeds could result in minor injury and/or equipment damage.
Excessively low speeds impose a heavy load on generator.

- DO NOT tamper with governed speed. Generator supplies correct rated frequency and voltage when running at governed speed.
- DO NOT modify generator in any way.

NOTICE Exceeding generators wattage/amperage capacity could damage generator and/or electrical devices connected to it.

- Start generator and let engine stabilize before connecting electrical loads.

NOTICE Improper treatment of generator could damage it and shorten its life.

- Use generator only for intended uses.
- If you have questions about intended use, contact your authorized dealer.
- Operate generator only on level surfaces.
- Adequate, unobstructed flow of cooling and ventilating air is critical to correct generator operation.
- The access panels/door must be installed whenever the unit is running.
- DO NOT expose generator to excessive moisture, dust, dirt, or corrosive vapors.
- Remain alert at all times while working on this equipment. Never work on the equipment when you are physically or mentally fatigued.
- DO NOT start engine with air cleaner or air cleaner cover removed.
- DO NOT insert any objects through cooling slots.
- DO NOT use the generator or any of its parts as a step. Stepping on the unit could cause stress and break parts. This may result in dangerous operating conditions from leaking exhaust gases, fuel leakage, oil leakage, etc.
- If connected devices overheat, turn them off and disconnect them from generator.
- Shut off generator if:
  - -electrical output is lost;
  - -equipment sparks, smokes, or emits flames;
  - -unit vibrates excessively.
  - -unit makes unusual noises.

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Installation

We sincerely appreciate your patronage. For this reason, we have made every effort to provide for a safe, streamlined and cost-effective installation. Because each installation is unique, it is impossible to know of and advise the trade of all conceivable procedures and methods by which installation might be achieved. Neither could we know of possible hazards and/or the results of each method or procedure. For these reasons,

Only current licensed electrical and plumbing professionals should attempt generator system installations. Installations must strictly comply with all applicable codes, industry standards and regulations.

Your generator is supplied with this "Operator's Manual" and a separate "Installation Manual". These are important documents and should be retained by the owner after the installation has been completed.

For the Owner

To help you make informed choices and communicate effectively with your installation contractor(s),

Read and understand *Owner Orientation* in this manual before contracting or starting your generator installation.

To arrange for proper installation, contact the store at which you purchased your generator, your dealer, a licensed electrician or your utility power provider.

The generator warranty is VOID unless the system is installed by licensed electrical and plumbing professionals.

Every effort has been made to ensure that information in this manual is accurate and current. However, we reserve the right to change, alter, or otherwise improve the product and this document at any time without prior notice.

The Emission Control System for this generator is warranted for standards set by the U.S. Environmental Protection Agency and by the California Air Resources Board (CARB).

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For the Installing Dealer/Contractor

For most applications, the Installation manual contains all the information required to properly install and start the generator. This Operator's Manual describes routine operation and owner maintenance procedures.

*If you need more information in this matter, please call **888 575-8226** between 8:00 AM and 5:00 PM CT..*

Owner Orientation

This section provides generator owners with the information necessary to achieve the most satisfactory and cost effective installation possible.

The illustrations are for typical circumstances and are meant to familiarize you with the installation options available with your generator. A thorough understanding of these options will provide fundamental control over the cost of your installation, as well as ensure your final satisfaction and security.

Federal and local codes, appearance, noise levels, fuel types, and distances are the factors that must be considered when negotiating with an installation professional. Remember that as the distance from the existing electrical service and gaseous fuel supply increases, and the number of 90 degree bends in the fuel supply increases; compensations in piping and wiring materials must be made. This is necessary to comply with local codes and overcome electrical voltage drops and gaseous fuel pressure drops.

The factors mentioned above will have a direct affect on the overall price of your generator installation.

In some areas you may need to acquire electrical permits for installing the generator, building permits for installing gas lines, and permits for noise allowances. Your installer should check your local codes AND obtain the permits before installing the system.

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Fuel Factors

An important consideration affecting the entire installation is the type of fuel used by your generator. The system was factory tested and adjusted using either natural gas or liquid propane (LP vapor). For proper engine function, factors that are inherent to each of these fuels, your location and the duration of possible utility interruptions are important considerations in the following fuel guidelines:

- Use clean, dry fuel, free of moisture or any particulate material. Using fuels outside the following recommended values may cause performance problems.
- In engines set up to run on propane (LP), commercial grade HD5 propane with a minimum fuel energy of 2500 BTUs/ft^3 with maximum propylene content of 5% and butane and heavier gas content of 2.5% and minimum propane content of 90%.

⚠ WARNING Propane and Natural Gas are extremely flammable and explosive, which could cause burns, fire or explosion resulting in death or serious injury.

- The residential generator is equipped with an automatic safety gas "fuel shut-off" valve.
- DO NOT operate the equipment if the "fuel shut-off" valve is missing or inoperative.

Power Decrease at High Altitude or High Temperature

Air density is less at high altitudes, resulting in less available engine power. Specifically, engine power will decrease 3.5% for each 1,000 feet (300 meters) above sea level and 1% for each 10° F (5.6°C) above 77°F (25°C). Make sure you and your installer consider these factors when determining total generator load.

Generator Location

The actual physical location of your generator has a direct affect on:

1. The amount of plumbing required to fuel your generator.
2. The amount of wiring required to control and connect your generator.

Specific location guidelines are discussed in the installation manual. Acquaint yourself with that information and confer with your installer. Be sure to ask how your site might affect installation costs and compliance with local codes and standards.

The generator must be installed outdoors. DO NOT install generator where exhaust gas could accumulate and enter inside or be drawn into a potentially occupied building. Ensure exhaust gas is kept away from any windows, doors, ventilation intakes or other openings that can allow exhaust gas to collect in a confined area. Prevailing winds and air currents should be taken into consideration when positioning generator. See the installation manual for full details on safe generator location.

⚠ WARNING Running engine gives off carbon monoxide, an odorless, colorless, poison gas.

Breathing carbon monoxide could result in death, serious injury, headache, fatigue, dizziness, vomiting, confusion, seizures, nausea or fainting.

- Operate this product ONLY outdoors.
- Install a battery operated carbon monoxide alarm near the bedrooms.
- Keep exhaust gas from entering a confined area through windows, doors, ventilation intakes, or other openings.

⚠ WARNING Exhaust heat/gases could ignite combustibles or structures resulting in death or serious injury.

- DO NOT install the generator closer than 5 feet (1.5 m) from any combustibles or structures with combustible walls having a fire resistance rating of less than 1 hour.

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Delivery Inspection

Carefully inspect the generator for any damage that may have occurred during shipment.

If loss or damage is noted at time of delivery, have the person(s) making delivery note all damage on the freight bill and affix his signature under the consignor's memo of loss or damage. If loss or damage is noted after delivery, separate the damaged materials and contact the carrier and your installer for claim procedures. Missing or damaged parts are not warranted.

The generator system is supplied with:

- Fully-serviced coolant system
- Fully-serviced oil/lubricating system
- Flexible fuel hook-up
- Installation and start-up manual
- Operator's manual
- Spare access door keys
- Spare 15 Amp ATO-type fuse
- Touch up paint
- Remote wireless monitor
- Antenna

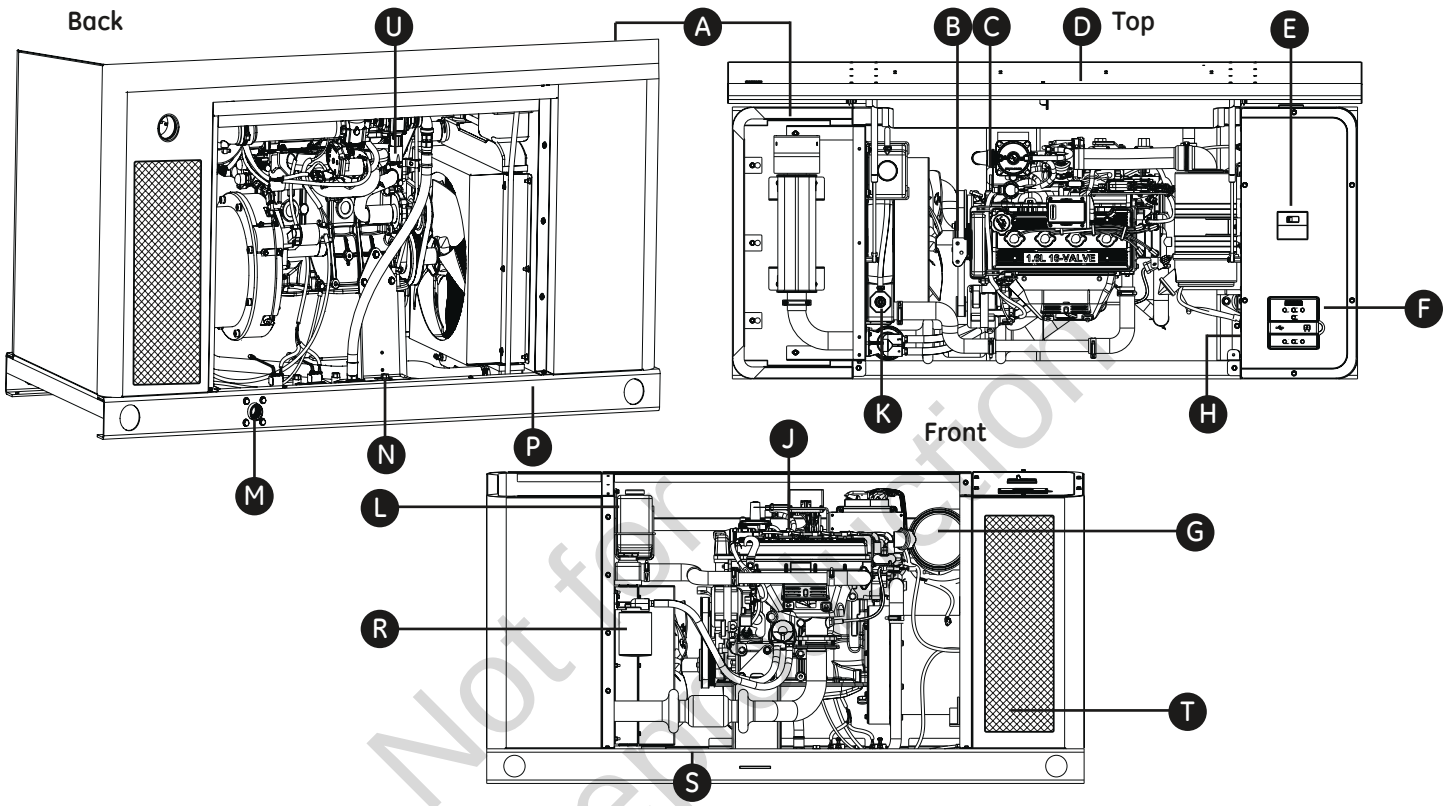
To be supplied by Installer:

- Starting battery
- Reinforced concrete mounting pad
- Connecting wire and conduit
- Fuel supply valves/plumbing
- Various specialty tools/equipment
- Two (2) AA batteries for remote wireless monitor

Controls

30 kW Generator

Read this operator's manual and *Important Safety Instructions* **before** operating your generator. Compare the illustrations of this model with your generator to familiarize yourself with the locations of various controls and adjustments. **Save this manual for future reference**.



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Generator is pictured with access doors removed for clarity and screen guard open for clarity.

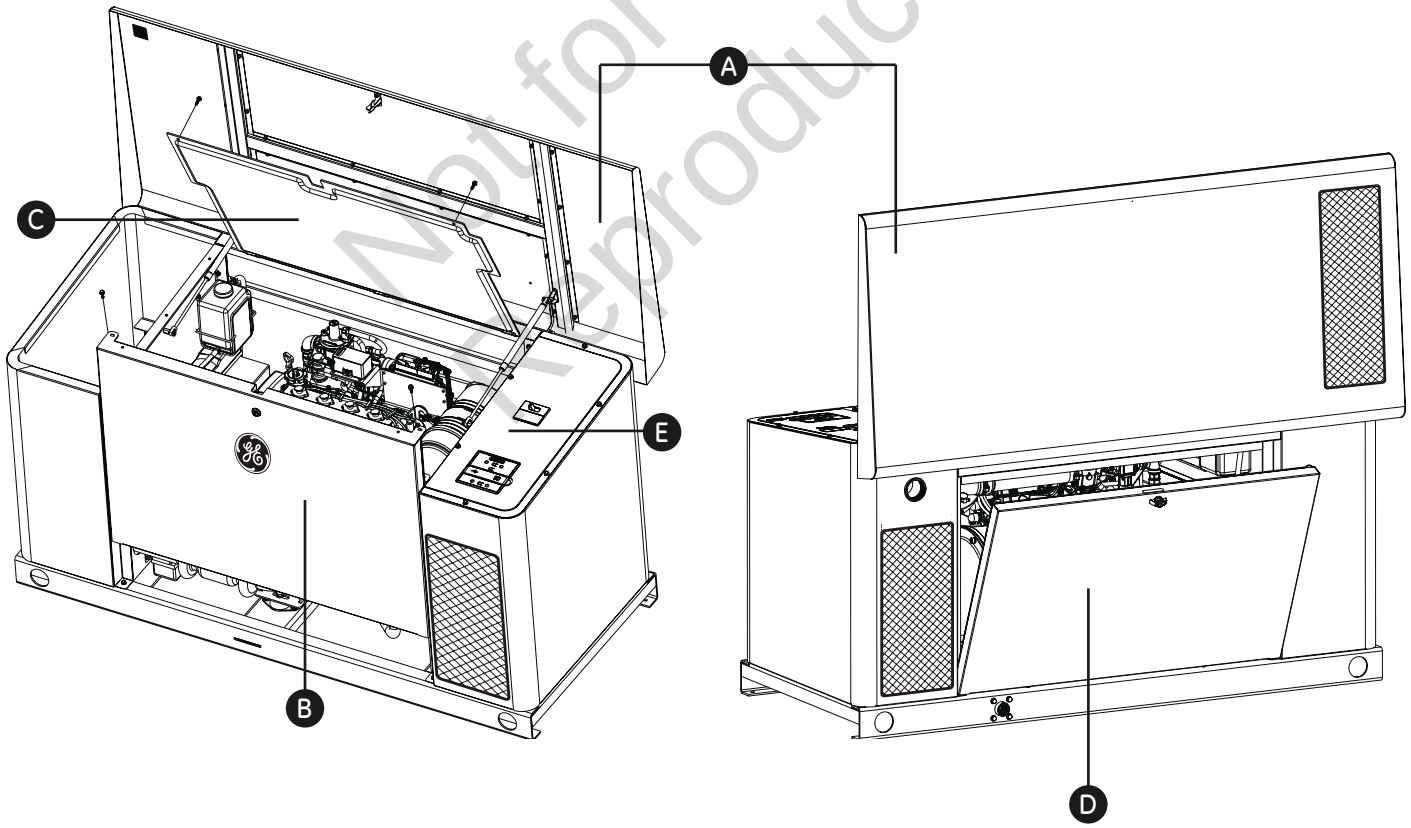
- **A** **Exhaust Port** — High-performance muffler lowers engine noise to comply with most codes.
- **B** **Engine Label** — Identifies engine model and type.
- **C** **Oil Dip Stick** — Used to check the engine oil level.
- **D** **Roof Access Opening** — Provides access to control panel, oil filter, etc.
- **E** **Circuit Breaker Enclosure** — Equipped with removable top to assist with conduit connection.
- **F** **Control Panel** — Used for various test, operation and maintenance functions. See *System Control Panel*.
- **G** **Air Cleaner** — Protects engine by filtering dust and debris out of intake air.
- **H** **Fuel Selection Switch** — Select natural gas or liquid propane (LP vapor) supply.
- **J** **Oil Fill Cap** — Remove to service the engine with recommended oil.
- **K** **Coolant Fill** — Provides access for filling engine coolant.
- **L** **Coolant Recovery Bottle** — Provides visual indicator of engine coolant level.
- **M** **Fuel Inlet** — Fuel supply is connected here.
- **N** **ID Label** — Identifies unit by serial number.
- **P** **Rear Access Panel Opening** — Provides access to various components of generator.
- **R** **Oil Filter** — Filters engine oil to prolong system life.
- **S** **Front Access Panel Opening** — Provides access to various components of generator.
- **T** **Battery Location** — Battery located for convenient access.
- **U** **Fuel Type Selector** — Position selector for Natural Gas (NG) or Liquid Propane (LP vapor) supply.

Access Ports

The generator is equipped with an enclosure that has several access panels, as shown.

The access panels and the components located behind them are listed below:

- A-Roof (Control Panel, internal guard)
- B-Front Access Panel (oil drain and oil filter)
- C-Internal Guard (air filter, oil dipstick, coolant bottle)
- D-Rear Access Panel (fuel regulator, fuel selector, and engine starter)
- E-Control Panel Cover (field wiring and control wires)



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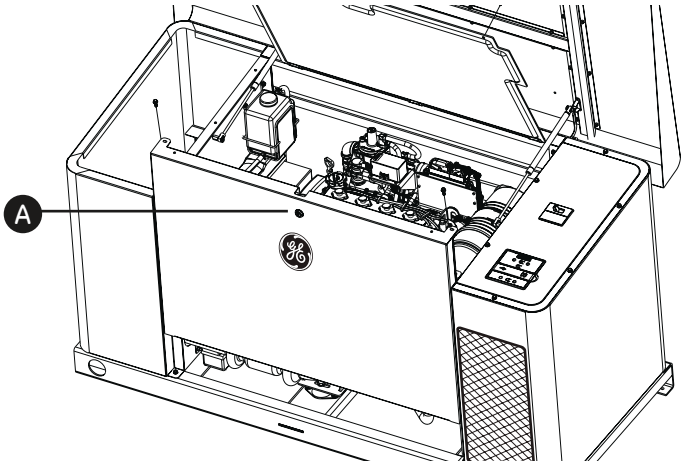
Each generator is shipped with a set of identical keys. These keys fit in the lock on the front and rear removable panels. The roof must be unlocked in order for it to open.

To open roof:

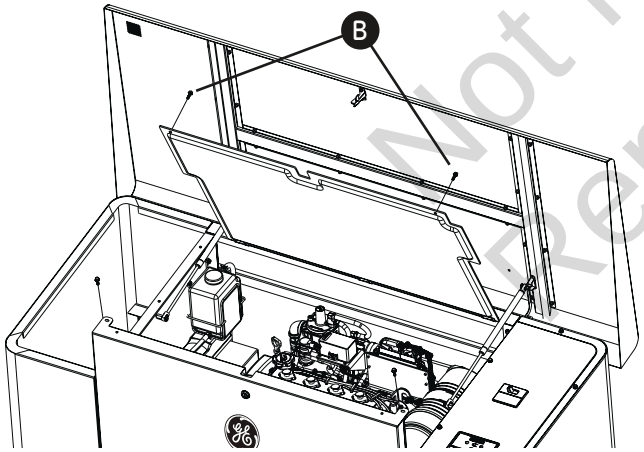
1. Insert key into lock A of front panel. Gently push down on roof above the lock to aid in turning the key. Turn key one quarter turn clockwise.



2. Lift roof to the open position.

To open internal guard:

1. Ensure the roof is in the open position.
2. Remove the two bolts B that secure the internal guard to the unit.



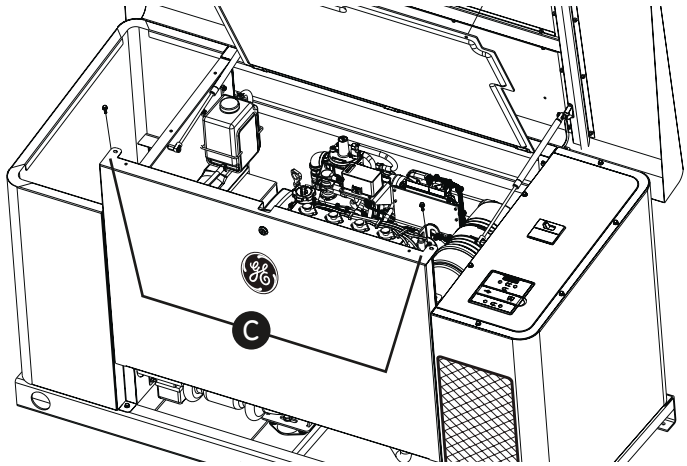
3. Lift up on panel and secure with tab on roof latch.

To secure internal guard:

1. Move holding tab on roof latch to release the panel, then lower the panel into place.
2. Secure the panel with two bolts.

To remove front panel:

1. Remove the two bolts C that secure the panel to the unit.



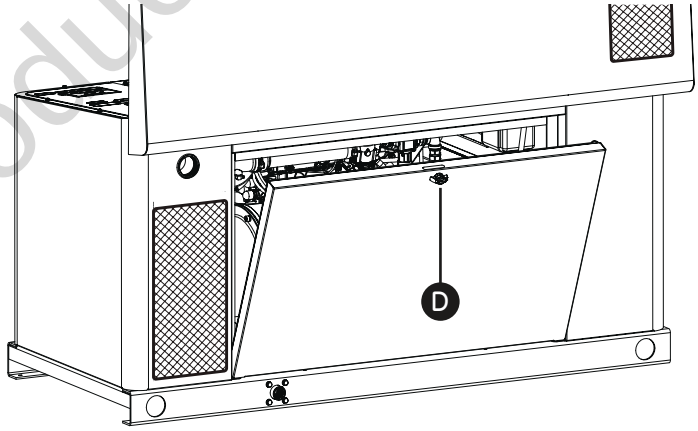
2. Lift panel to remove from unit.

To secure front panel:

1. Place panel in unit.
2. Secure the panel with two bolts.

To remove rear panel:

1. Insert key into lock D of rear panel. Turn key one quarter turn counterclockwise to unlatch.



2. Open panel so that it clears the hinges.
3. Lift panel to remove from unit.

To secure rear panel:

1. Slide panel into place on unit.
2. Secure the panel with keyed lock (turn clockwise to latch).

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System Control Panel

The generator control board, located inside the generator, under the roof, is shown below. Brief descriptions of the controls used during installation are:

A - Menu/Programming Navigation Buttons — See *Menu* section for details

B - Mini USB Port — Authorized Dealer Service Use Only

C - Generator Operation Control Buttons —

- "**AUTO**" Normal operating position. Press and hold button to put unit into Automatic mode. If an utility power outage is sensed, the system will start the generator. When utility power is restored, **AUTO** lets the engine stabilize internal temperatures, shuts off the generator, and waits for the next utility outage.
- "**OFF**" Turns off running generator, prevents unit from starting, and resets any detected faults.

OFF must be pressed and held for more than 5 seconds in order to reset service codes.

- "**MANUAL**" Used to manually start the generator.

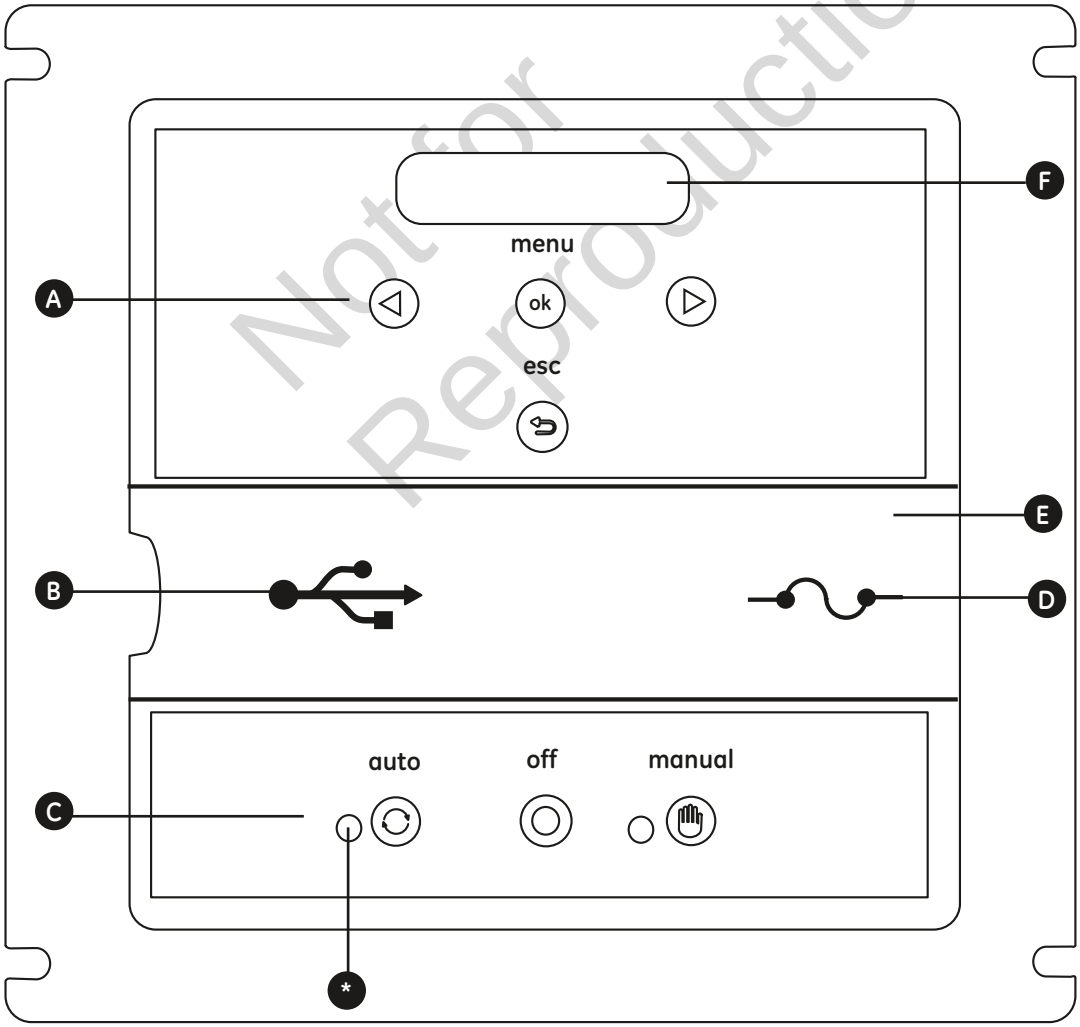
*** - "AUTO" LED** — LED will light when unit is placed into **AUTO** mode. LED will blink if exercise cycle is not set or set to OFF.

D – 15 Amp Fuse — Protects the generator DC control circuits. If the fuse has 'blown' (melted open) or was removed, the engine cannot crank or start. Replace the fuse using only an identical ATO 15 Amp fuse. One spare fuse is supplied with the unit.

E - Cover — This protective cover must be opened to access the fuse and the USB port.

F - Digital Display — Displays generator mode, menu options, service codes, and service engine indicators

More information may be found in *Controls* in the operator's manual.



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Menu

The following chart shows the icons for the buttons that control the system control panel.

	MENU	ENTER THE MENU (VIEW SETTINGS) PRESS TO CONFIRM SELECTION WHEN PROGRAMMING.
	ESCAPE (EXIT)	RETURN TO LAST MENU ITEM
	RIGHT ARROW	TOGGLE THROUGH MENU OPTIONS SETTING SYSTEM PARAMETERS
	LEFT ARROW	TOGGLE THROUGH MENU OPTIONS SETTING SYSTEM PARAMETERS
	MANUAL MODE	USED TO MANUALLY START THE GENERATOR. PRESS AND HOLD BUTTON TO START THE GENERATOR.
	OFF	TURNS OFF RUNNING GENERATOR, PREVENTS UNIT FROM STARTING, AND RESETS ANY DETECTED FAULTS.
	AUTOMATIC MODE	NORMAL OPERATING POSITION. PRESS AND HOLD BUTTON TO PUT UNIT INTO AUTOMATIC MODE. IF A UTILITY POWER OUTAGE IS SENSED, THE SYSTEM WILL START THE GENERATOR. WHEN UTILITY POWER IS RESTORED, AUTO LETS THE ENGINE STABILIZE INTERNAL TEMPERATURES, SHUTS OFF THE GENERATOR, AND WAITS FOR THE NEXT UTILITY POWER OUTAGE.

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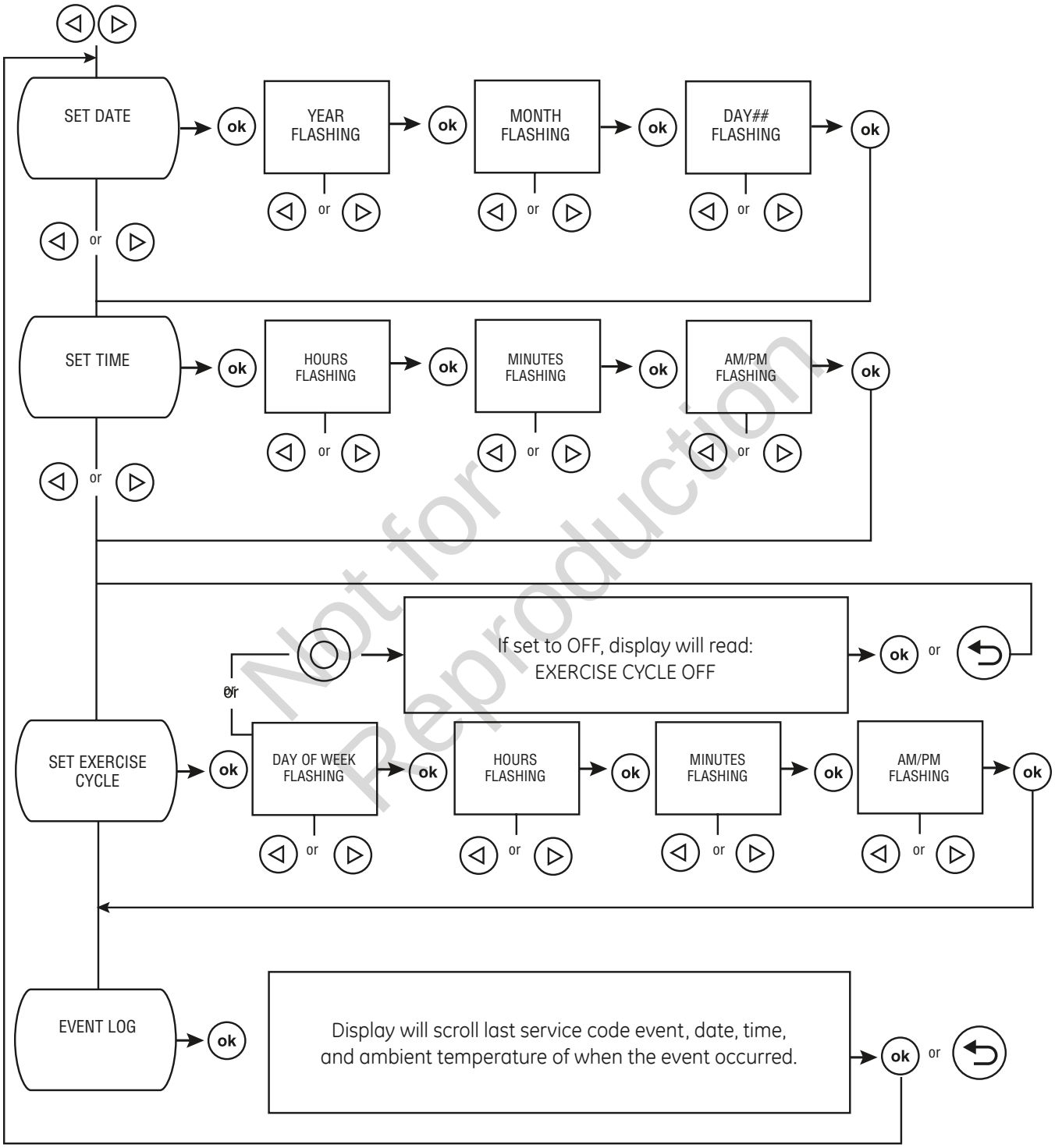
The following chart describes key sequences for accessing different programming modes;

	GENERAL SET-UP	PRESS AND HOLD **[ARROW LEFT AND ARROW RIGHT]** FOR THREE SECONDS TO ENTER THE PROGRAM MODE.
	ADVANCED SETTINGS	PRESS AND HOLD **[ARROW LEFT, ARROW RIGHT AND ESC]** FOR THREE SECONDS TO ENTER THE ADVANCED SETTINGS MODE.
	WIRELESS LINK MODE	PRESS AND HOLD **[MENU AND ESC]** FOR THREE SECONDS TO ENTER THE WIRELESS LINKING MODE.

General Set Up Screen

For general set up, press and hold the left arrow and right arrow ◁ ▷ for 3 seconds. Follow the prompts as outlined below.

NOTE: Date and Time were set at the factory and stored in the control panel memory. The Exercise Cycle was also set at the factory. The default exercise cycle occurs on Tuesdays, at 2:00 P.M. Central Standard Time. To update or change these settings, follow the steps below.



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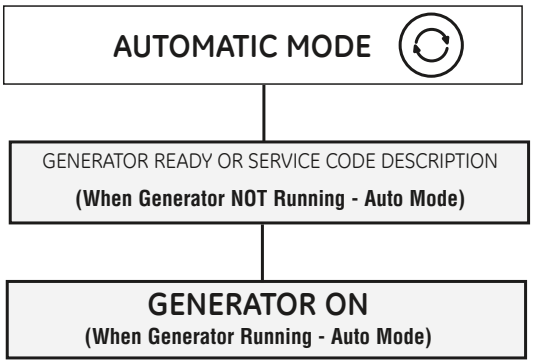
IF DURING PROGRAMMING NO BUTTONS ARE PRESSED FOR 30 SECONDS, THE CONTROL PANEL WILL AUTOMATICALLY EXIT THE PROGRAM MODE.

Control Panel Prompts

Automatic Mode

In Automatic Mode, the display screen will display via scrolling text:

- Generating set READY - if the unit is in standby and utility power is present.
- Generating set ON - if the unit is running and utility power is not present.
- SERVICE CODE - if a system fault has been detected.


AUTOMATIC MODE
GENERATOR READY OR SERVICE CODE DESCRIPTION
(When Generator NOT Running - Auto Mode)
GENERATOR ON
(When Generator Running - Auto Mode)

General System Parameters

To view general system parameters, press the MENU button.

The following will scroll across the digital display and then move to the next item:

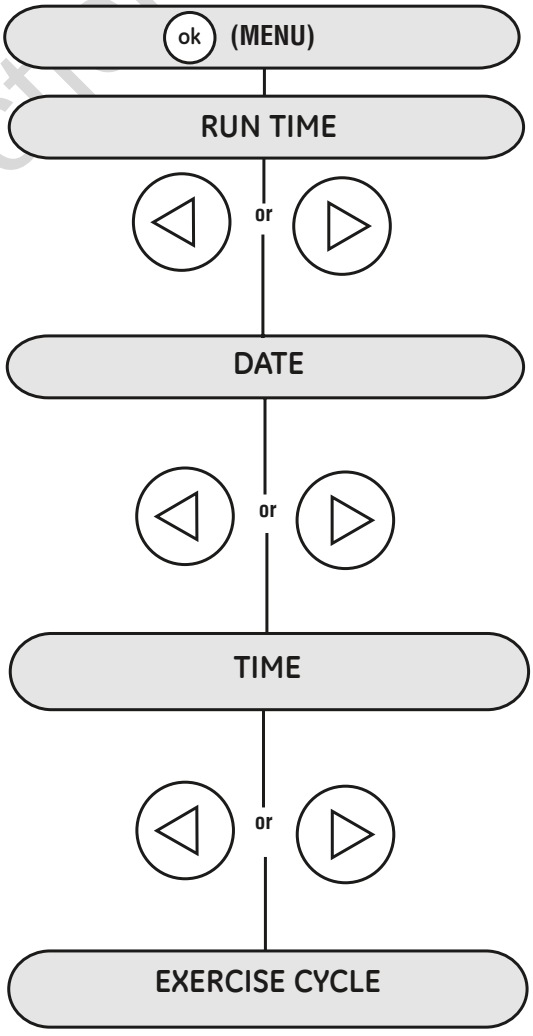
- Run time
- Date
- Time
- Exercise Cycle date and start time

The user can press the LEFT ARROW or RIGHT ARROW at any time to move to the next item.

The user can press ESCAPE to go back to Generating set READY.

If no user inputs are made for 10 seconds after all the items have been displayed, the control board will reset to

Generating set READY.



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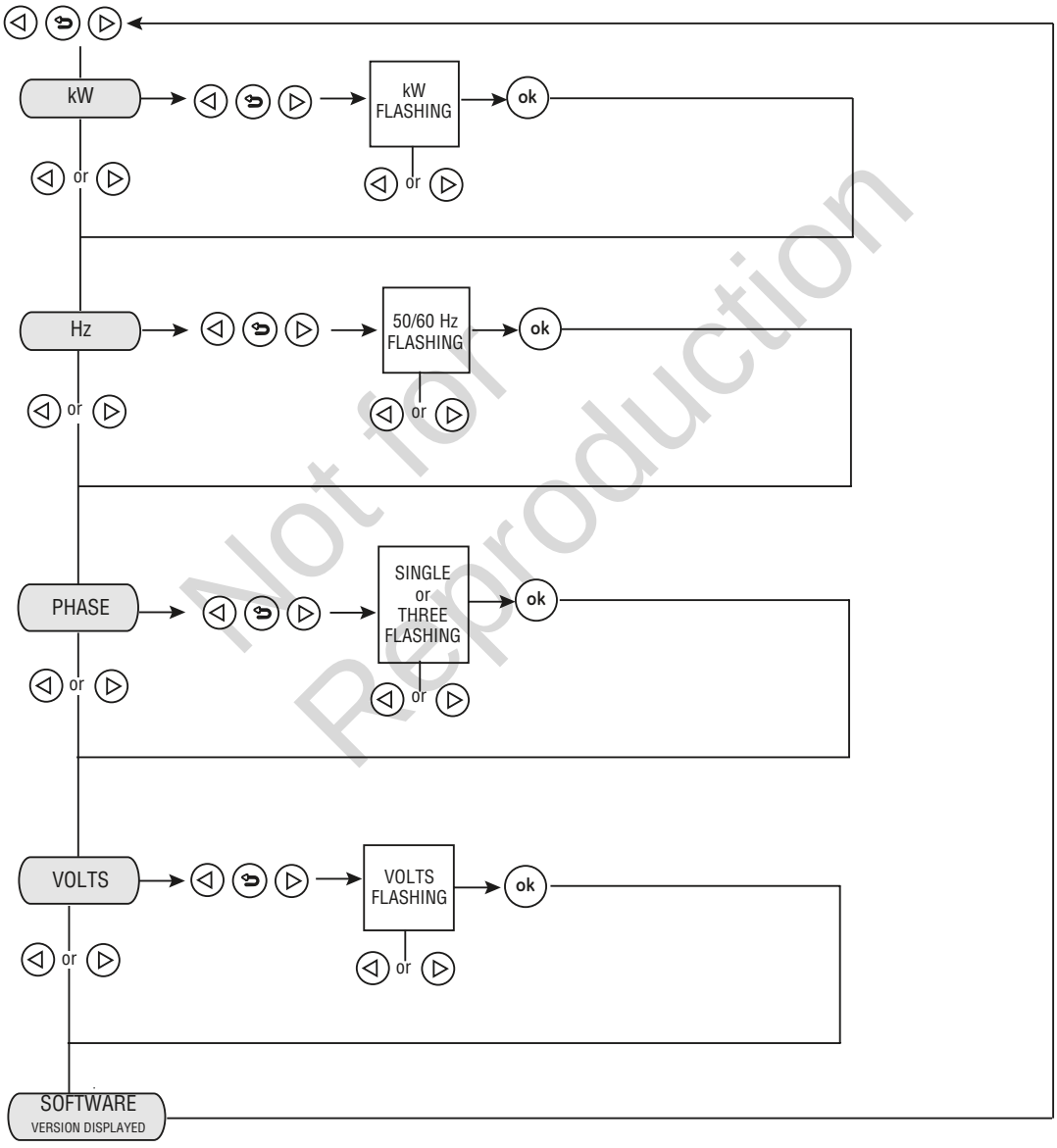
Advanced Settings Screen

Advanced setting parameters are preset at the factory for a typical installation. To view Advanced Settings items and/or to change items, follow the instructions listed below.

NOTICE Advanced settings are critical to the operation of the unit. Careful consideration should be taken when working in the Advanced Settings menu. Exercise caution when selecting and verifying parameters for the generating set and region where the generating set is being operated. Confirm all settings before operating the generating set for the first time.

For advanced menu items, press and hold the left arrow, right arrow, and escape key ◁ ⮌ ▷ for 3 seconds. Follow the prompts as outlined below.

NOTICE In the Advanced Setting menu, a three button access code (left arrow, right arrow, and escape key ◁ ⮌ ▷ must be pressed once to enter the menu and again to change any setting. After each confirmation of a setting, the selection will display solid for 2 seconds before moving to the next program item.



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Operation

Important Owner's Considerations

Engine Oil

NOTICE Any attempt to crank or start the engine before it has been properly serviced with the recommended oil will result in equipment failure.

- Refer to *Maintenance* section for coolant and oil fill information.
- Damage to equipment resulting from failure to follow this instruction will void engine and generator warranty.

The engine is shipped from the factory pre-run and filled with synthetic oil (API SJ/CF 5W-30). This allows for system operation in a wide range of temperature and climate conditions. Before starting the engine, check oil level and ensure that engine is serviced as described in the *Maintenance* section.

Coolant System

This engine is shipped from the factory filled with a 50-50 mix of automotive (Ethylene glycol) anti-freeze and water. This will provide optimum year round protection against freezing, boiling and corrosion. The coolant system incorporates an optional water heater that operates when ambient temperature is below 80ºF **AND** utility power is present at the transfer switch. Before starting the engine, check coolant level as described in the *Maintenance* section

Battery

⚠ WARNING Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

The installer must supply a valve-regulated, rechargeable 12 volt DC starting battery. See *Battery* in *Final Installation Considerations* in the installation manual.

With the battery installed, all wiring to transfer switch and generator completed, utility power supplied to the automatic transfer switch, and the unit in **AUTO** mode, the battery receives a trickle charge while the engine is not running. The trickle charge cannot be used to recharge a battery that is completely discharged.

15 Amp Fuse

The generator's 15 Amp fuse is critical to correct system operation. Your installer will ensure the fuse is properly installed upon completion of the installation.

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Automatic Operation

The generator's control board constantly monitors utility voltage. Should utility voltage drop below a preset level, the control board will signal the engine to crank and start.

When utility voltage is restored above a preset voltage level, the engine is signaled to shut down.

The actual system operation is not adjustable and is sequenced by sensors and timers on the control board, as follows:

Utility Voltage Dropout Sensor

- This sensor monitors utility source voltage.
- If utility source voltage drops below about 70 percent of the nominal supply voltage, the sensor energizes a 3 second timer. The timer is used to 'sense' brown-outs.
- Once the timer has expired, the engine will crank and start.

Utility Voltage Pickup Sensor

This sensor monitors utility voltage. When utility voltage is restored above 80 percent of the nominal source voltage, a time delay starts timing and the engine will go to engine cool-down.

Engine Cool-down Timer

When utility power is sensed and the load transfers back to the utility source, the engine will go into a cool down period as described below:

- If the generator has run for MORE than 5 minutes, once the utility transfer occurs, the engine will continue to run for about 1 minute before shutting down.
- If the generator has run for LESS than 5 minutes, once the utility transfer occurs, the engine will continue to run until 5 minutes has elapsed before shutting down.

Setting the Exercise Timer

The generator is equipped with an exercise timer. During the exercise period, the unit runs for approximately 20 minutes and then shuts down. Electrical load transfer DOES NOT occur during the exercise cycle (unless an utility power outage occurs).

The generator will only enter the exercise cycle if the unit is in the AUTO mode and this exact procedure is followed.

To set the exercise timer:

NOTICE The generator is set with a deservice code exercise cycle setting of Tuesday at 2:00 P.M, Central Time. To change the cycle setting, proceed with the following steps:

1. Choose the day and time you want your generator to exercise.
2. Press and hold the left arrow and right arrow simultaneously for three seconds to enter the General Set-Up program mode. See *General Set-Up* flow chart in Menu Section.
3. Verify and/or set the time and date on the unit.
4. Go to the SET EXERCISE prompt and hit the "OK" button.

NOTICE Items will flash until they are selected.

SELECT DAY: Use the left or right arrow to toggle through the days of the week, Once the day is selected, hit the "OK" button.

SELECT HOUR: Use the left or right arrow to toggle through between 1 and 12. Choose the hour of day you want the generator to exercise then hit the "OK" button.

SELECT MINUTE: Use the left of right arrow to toggle between :00 and :59. Choose the minute of the day you want the generator to exercise then hit the "OK" button.

SELECT AM/PM: Use the left of right arrow to toggle between AM and PM. Once chosen, hit the "OK" button.

NOTICE During the weekly exercise cycle, the generator will run for 20 minutes, but it will not supply power to the building. During the exercise cycle, the in-building monitor will continue blinking the GENERATOR READY green LED.

If you want to change the day and time the unit exercises, simply perform the procedure again.

To turn off the generator exercise cycle, go to the OFF selection within the day of the week menu and press OK. The display will then scroll: EXERCISE CYCLE OFF.

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Maintenance

Servicing the System

Before performing any generator maintenance, always perform the following steps:

1. Set generator's circuit breaker to its OFF position.
2. Press and hold the control board OFF button.
3. Remove 15 Amp fuse from control board.
4. Utility voltage is present at generator control board. Disconnect power before servicing control board by removing the fuses from the transfer switch.
5. After all servicing has been completed, replace fuses in transfer switch, replace 15 Amp fuse in control board, set circuit breaker **ON** and press and hold control board **AUTO** button for 3 seconds.

Service Code Detection System

The generator may have to run for long periods of time with no operator present. For that reason, the system is equipped with sensors that automatically shut down the generator in the event of potentially damaging conditions, such as low oil pressure, high temperature, over speed, and other conditions.

The generator's control board shows service code descriptions scrolling across the digital display. The service code descriptions are listed below:

- Low Battery Voltage
- Low Oil Pressure
- Under Voltage
- Over Voltage
- Engine Does Not Start
- Low Frequency
- Engine Overspeed
- High Coolant Temperature
- Transfer Switch Service code
- No Wireless Communication
- Battery Charge Circuit
- Service Engine

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Reset Service code Detection System

The operator must reset the service code detection system each time it activates. To do so, press the control board OFF button for 5 seconds. Once the display turns off, leave it off for at least 30 seconds. Remedy the service code condition, then return the generator to service by pressing and holding the control board AUTO button and installing the 15 Amp fuse (if removed).

Low Battery Voltage

This service code is indicated by *Low Battery Voltage* scrolling across the digital display and a single flash on the wireless monitor. This condition occurs if the battery voltage drops below the preset value. Causes for this problem may be a service code battery or battery charge circuit. See *Battery Charge Circuit*,

Remove the 15 Amp fuse and disconnect the battery from the generator. Test the battery voltage. If voltage meets specifications, take the battery to a local battery store for analysis. Or contact your local service center for assistance.

Reinstall the battery (replace if necessary - see *Battery* in *Final Installation Considerations* in the installation manual). Then reset the service code detection system, as described earlier.

Low Oil Pressure

This service code is indicated by *Low Oil Pressure* scrolling across the digital display and two flashes on the wireless monitor. The unit is equipped with an oil pressure sensor that is monitored by the engine ECU. Should oil pressure drop below the 50 psi range, the engine will shut down.

To remedy the low oil pressure condition, add the recommended oil to the FULL mark on the dipstick.

If the low oil pressure condition still exists, the engine will start, then shut down again. The service code will appear. In this case, contact an authorized dealer.

Under Voltage

This service code is indicated by *Under Voltage* scrolling across the digital display and three flashes on the wireless monitor. This condition is caused by a restriction in the fuel flow, the electronic governing system not functioning properly, a broken or disconnected signal lead, a failed alternator winding, the control board circuit breaker is open, or the generator is overloaded.

To remedy the problem, contact your installer or an authorized dealer.

Over Voltage

This service code is indicated by *Over Voltage* scrolling across the digital display and three flashes on the wireless monitor. This feature protects devices connected to the transfer switch by shutting the generator down if the generator output voltage happens to increase above the preset limit.

This condition is most likely caused by a failed voltage regulator, alternator excitation circuit or a load imbalance. To remedy the problem, contact your installer or an authorized dealer.

Engine Does Not Start

This service code is indicated by *Engine Does Not Start* scrolling across the digital display and four flashes on the wireless monitor. This feature prevents the generator from damaging itself if it continually attempts to start in spite of another problem, such as no fuel supply. Each time the system is directed to start, the unit will crank for 10 seconds, pause for 10 seconds, and repeat. If the system does not begin producing electricity after approximately 2 minutes, the unit will stop cranking.

The most likely cause of this problem is no fuel supply or incorrect fuel selector setting. See *Fuel Selection Switch* in the installation manual. Check the internal and external fuel shut off valves to ensure they are fully open. Other causes could be failed spark plug(s), a loose electronic governor connection, a failed engine ignition, or the engine air filter is clogged. You may need to contact your installer for assistance if you can't remedy these problems.

Low Frequency

This service code is indicated by *Low Frequency* scrolling across the digital display and five flashes on the wireless monitor. This feature protects devices connected to the transfer switch by shutting the generator down if the engine runs slower than 55 Hz for three seconds. This condition is caused by a failed engine component, electronic governor system, or by excessive loads on the generator. To resolve the problem, contact your installer or an authorized dealer.

Engine Overspeed

This service code is indicated by *Engine Overspeed* scrolling across the digital display and six flashes on the wireless monitor. This condition can be caused by a problem within the electronic governor system.

To resolve the problem, contact your installer or an authorized dealer.

High Coolant Temperature

This service code is indicated by *High Coolant Temperature* scrolling across the digital display and seven flashes on the wireless monitor. The contacts of the temperature switch are normally open. If the engine temperature exceeds a predetermined temperature, the service code is detected and the engine shuts down.

Common causes for this condition include running the unit with an access doors removed, obstructed air inlet or exhaust port, or debris in the engine compartment or running unit with roof open.

To resolve the problem, let the engine cool down and remove any accumulated debris and obstructions. Ensure that the access doors are installed and the roof is closed whenever the unit is running. If problem persists, contact your installer or an authorized dealer.

Transfer Switch Service code

This service code is indicated by *Transfer Switch Service code* scrolling across the digital display (if transfer switch is equipped with service code detection) and eight flashes on the wireless monitor.

The most likely cause of this service code is a blown fuse in the transfer switch. To remedy the problem, contact your installer or an authorized dealer.

No Wireless Communication

This service code is indicated by *No Monitor Communication* scrolling across the digital display. The SERVICE NEEDED red LED on the wireless monitor will flash 20 fast pulses, pause 5 seconds, and repeat if there is a loss in communication between the wireless monitor and the generator.

To resolve the problem, move the wireless monitor closer to generator. Re-link if necessary.

Battery Charge Circuit

This service code is indicated by *Battery Charge Circuit* scrolling across the digital display. The most likely cause is an electrical problem with the control panel. To remedy the problem, contact your installer or an authorized dealer.

Service Engine

The engine is equipped with on-board diagnostics that monitor the operation of emission related components. If an emission related problem has been detected, the system control panel will display Service Engine. If Service Engine displays while the generator is running, a diagnostic trouble code may be set or a problem may exist in the system which has caused the engine emissions to go outside the standards certified by the Environmental Protection Agency. It is the responsibility of the operator to contact an authorized service technician to repair this condition.

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Generator Maintenance

Generator maintenance consists of keeping the unit clean. Operate the unit in an environment where it will not be exposed to excessive dust, moisture or any corrosive vapors. Cooling air louvers on the enclosure must not become clogged with snow, leaves, or any other foreign material. To prevent generator damage caused by overheating, keep the enclosure cooling inlets and outlets clean and unobstructed at all times.

Check the cleanliness of the unit frequently and clean when dust, dirt, oil, moisture or other foreign substances are visible on its exterior/interior surface. Inspect the air inlet and outlet openings inside and outside the enclosure to ensure air flow is not blocked.

DO NOT use direct spray from a garden hose to clean generator. Water can enter the engine and generator and cause problems.

Cleaning the Generator

1. Press and hold the control board OFF button.
2. Remove 15 Amp fuse from control board.
3. Clean generator as desired.

NOTICE Improper treatment of generator can damage it and shorten its life.

- DO NOT expose generator to excessive moisture, dust, dirt, or corrosive vapors.
- DO NOT insert any objects through cooling slots.
- Use a damp cloth to wipe exterior surfaces clean.
- Use a soft, bristle brush to loosen caked on dirt, etc.
- Use a vacuum cleaner to pick up loose dirt and debris.
- Use low pressure air (not to exceed 25 psi) to blow away dirt. Inspect cooling air slots and openings on the generator. These openings must be kept clean and unobstructed.

4. Reinstall 15 Amp fuse in control board.
5. Press and hold the control board **AUTO** button.

Engine Maintenance

The maintenance of an engine and related components are critical to its operating performance and lifespan. Industrial engines operate in an environment that often include hot and cold temperatures and extreme dust. The recommended maintenance schedule is listed in this section, however, environmental operating conditions and additional installed equipment may require more frequent inspection and servicing.

The owner and/or authorized service technician should review the operating conditions of the equipment to determine the inspection and maintenance intervals. Proper engine cooling and lubrication are very important, so pay particular attention to these matters.

Not for Reproduction

Engine Oil

The engine is shipped from the factory pre-run and filled with synthetic oil (API SJ/CF 5W-30). This allows for system operation in a wide range of temperature and climate conditions.

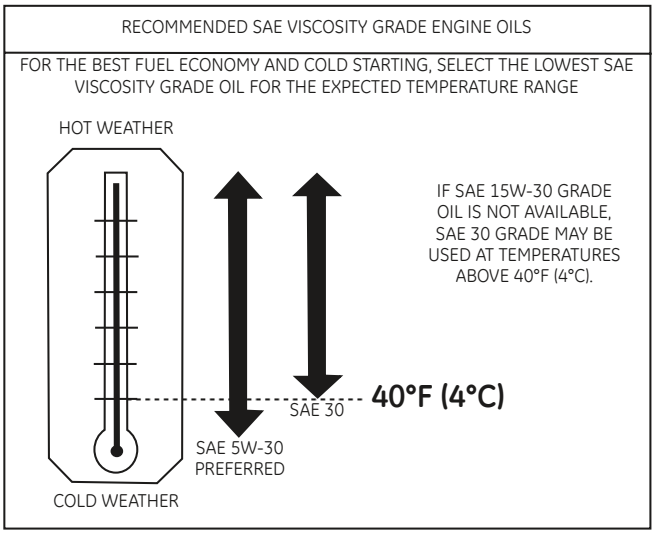
Synthetic Oils

Synthetic oils have been available for use in industrial engines for a relatively long period of time and may offer advantages in cold and hot temperatures. However, it is not known if synthetic oils provided operational or economic benefits over conventional petroleum-based oils in industrial engines.

Use of synthetic oils does not permit the extension of oil change intervals.

Oil Recommendation

Select an engine oil viscosity that will best match the prevailing daytime temperature.


RECOMMENDED SAE VISCOSITY GRADE ENGINE OILS
FOR THE BEST FUEL ECONOMY AND COLD STARTING, SELECT THE LOWEST SAE VISCOSITY GRADE OIL FOR THE EXPECTED TEMPERATURE RANGE
HOT WEATHER
IF SAE 15W-30 GRADE OIL IS NOT AVAILABLE, SAE 30 GRADE MAY BE USED AT TEMPERATURES ABOVE 40°F (4°C).
40°F (4°C)
SAE 30
SAE 5W-30 PREFERRED
COLD WEATHER

The oil must meet GM specification 9986231. Motor oils meeting this specification receive the API (American Petroleum Institute) starburst symbol.

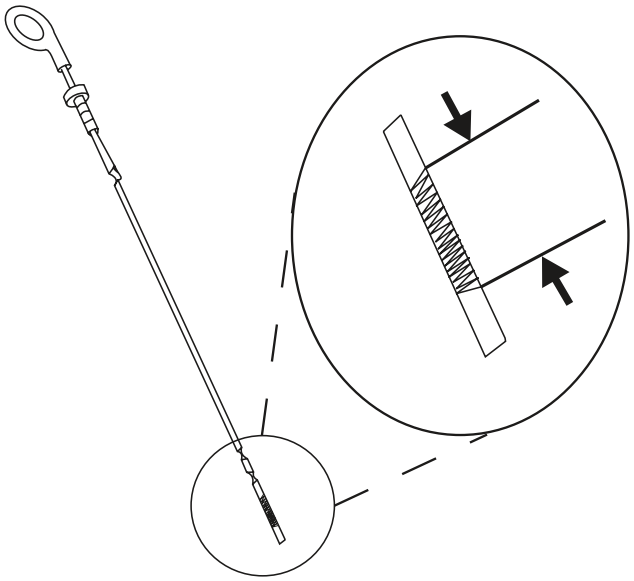
It is noted that the GF-4 oils are also "backwards compatible" and are equal or better that previous grades of oil in all aspects.

Note: Synthetic oil meeting ILSAC GF-2, API certification mark and API service symbol (shown at left) with "SJ/CF ENERGY CONSERVING" or higher, is an acceptable oil at all temperatures. **Use of synthetic oil does not alter required oil change intervals.**

Checking Engine Oil Level

NOTICE It is important to be careful when checking engine oil level. Oil must be maintained between "ADD" and the "FULL" mark on the dipstick. To ensure that you are not getting a false reading, make sure the following steps are taken before checking the oil level.

1. Stop engine.
2. Set control board system switch to OFF.
3. Remove 15 Amp fuse from control panel.
4. Allow approximately five minutes for the oil to drain back into the oil pan.
5. Remove the dipstick. Wipe with a clean cloth or paper towel and reinstall. Push the dipstick all the way into the dipstick tube.
6. Remove the dipstick and note the amount of oil on the dipstick. The oil level must be between the "ADD" and "FULL" marks.
7. If the oil level is below the "ADD" mark, reinstall the dipstick and proceed to step 8.
8. Remove the oil filler cap from the valve cover.
9. Add the required amount of oil to bring the level up to, but not over the "FULL" mark on the dipstick. Reinstall the oil filler cap to valve rocker arm cover and wipe any excess oil clean.



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Changing Engine Oil

⚠ CAUTION Avoid prolonged or repeated skin contact with used motor oil.

- Used motor oil has been shown to cause skin cancer in certain laboratory animals.
- Thoroughly wash exposed areas with soap and water.

KEEP OUT OF REACH OF CHILDREN. DON'T POLLUTE. CONSERVE RESOURCES. RETURN USED OIL TO COLLECTION CENTERS.

Change oil while the engine is still warm from running.

1. Press and hold the control board OFF button.
2. Remove 15 Amp fuse from control board.
3. Place oil drain hose into an approved container.
4. Remove brass fitting from end of drain hose and drain oil into an approved container.
5. When oil has drained, replace brass fitting on hose.
6. Place an approved container under oil filter.
7. Remove oil filter and dispose of properly.
8. Before installing a new oil filter, lightly lubricate the oil filter gasket with fresh, clean oil.
9. Install the oil filter by hand until the gasket contacts the oil filter adapter, then tighten the oil filter 1/2 to 3/4 turn.
10. Add the required amount of oil to bring the level up to, but not over the "FULL" mark on the dipstick. Reinstall the oil filler cap to valve rocker arm cover and wipe any excess oil clean.
11. Reinstall 15 Amp fuse in control board.
12. Press and hold the control board **MANUAL** button to start engine. As engine warms up, check for oil leaks.
13. Stop engine by pressing and holding control board OFF button.
14. Wait for oil to settle, check oil level and add if necessary.
15. Press and hold the control board **AUTO** button.

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Engine Drive Belts

The engine installed in this equipment uses drive belt(s) that drive the water pump and alternator. The drive belt(s) are an integral part of the cooling and charging system and should be inspected according to the maintenance schedule.

When inspecting the belts, check for:

- Cracks
- Chunking of the belt
- Splits
- Material hanging loose from the belt
- Glazing, hardening

If any of these conditions exist, the belt should be replaced.

Engine Coolant System

It is important that the cooling system of the engine be maintained properly to ensure proper performance and longevity.

⚠ WARNING Hot pressurized coolant can cause severe injury.

- DO NOT open radiator cap when hot.
- Before servicing, allow coolant to cool.

NOTICE Alcohol or methanol based anti-freeze or plain water are not recommended for use in the cooling system at any time.

Coolant

With the engine cold, check the coolant level in the coolant recovery bottle (see Controls). Specifications for the coolant system can be found in the Maintenance chart of this manual. Coolant Specification - ethylene-glycol 50-50 mixture with distilled water.

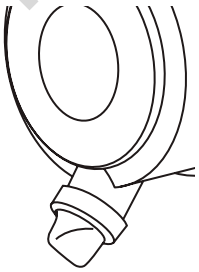
The cooling system must be maintained according to the recommended maintenance schedule and inspection should include:

- The regular removal of dust, dirt, debris from the radiator core and fan shroud.
- Inspection of coolant hoses and components for leaks, especially at the radiator hose connections. Tighten hose clamps if necessary.
- Check radiator hoses for swelling, separation, hardening, cracks, or any type of deterioration.
- Inspect the radiator cap to ensure proper sealing.

Engine Air Cleaner

Once each year service the air cleaner, as follows. If operating in a dusty environment, service more often.

1. Press and hold the control board OFF button.
2. Remove 15 Amp fuse from control board.
3. Remove filter cartridge - Remove the service cover by disengaging three clips and detaching cover, starting with the bottom two clips and the top clip last. Gently move the end of the filter back and forth, then rotate while pulling straight out.
4. Clean outlet tube and check Vacuator™ valve - Use a clean cloth to wipe the filter sealing surface and the outlet tube surfaces. Make sure that all contaminant is removed before the new filter is inserted. Be careful not to damage the sealing area on the tube.

   Visually check and physically squeeze Vacuator valve attached to service cover to make sure it is flexible and not inverted, damaged or plugged.
5. Clean filter - Use a soft bristle brush to loosen dirt and a vacuum cleaner to remove dirt and debris. Low pressure air (not to exceed 25 psi) may also be used to blow away dirt. Replace filter cartridge if any holes are detected in filter media.
6. Install clean filter properly - Insert the filter carefully. Seat the filter by hand, making certain it is completely into the air cleaner housing before securing the cover in place. To complete a tight seal, apply pressure by hand at the outer rim of the filter, not the flexible center. (Avoid pushing on the center of the urethane end cap.) No cover pressure is required to hold the seal.

   NEVER use the service cover to push the filter into place! Using the cover to push the filter in could cause damage to the housing, cover, or fasteners and will void the warranty. If the service cover hits the filter before it is fully in place, remove the cover and push the filter (by hand) further into the air cleaner and try again. The cover should go on with no extra force.
7. Reinstall service cover - Once the filter is in place, reinstall the service cover, positioning the cover with the arrow and the word TOP to the top. Fasten the top clip first, the bottom two clips last. Make sure that all mounting bands, clamps, bolts, and connections in the entire air cleaner system are tight and verify absence of holes in piping - repair if needed.
8. Reinstall 15 Amp fuse in control board.
9. Press and hold the control board **AUTO** button.

Not for Reproduction

Generator Electrical System Maintenance

The generator's electrical system incorporates computers to control various related components. The electrical system connections and ground circuits require good connections. Follow the recommended maintenance schedule located in the Maintenance section of this manual.

When inspecting the electrical system, check the following:

- Check positive (+) and negative (-) battery cables for corrosion, rubbing, chafing, burning, and ensure tight connections at both ends.
- Check battery for cracks or damage to the case. Replace as necessary.
- Inspect engine wire harness for rubbing, chafing, pinching, burning, and crack or breaks in the wiring.
- Verify that the engine harness connectors are correctly locked in.
- Inspect ignition coil wire for hardening, cracking, chafing, burning, separation, and split boot covers.
- Inspect spark plug wires for hardening, cracking, chafing, burning, separation, and split boot covers.
- Inspect spark plugs at the required intervals per the recommended maintenance schedule.
- Verify that all electrical components are securely mounted to the engine or chassis.
- Verify that any additional electrical services installed by the owner are properly installed in the system.

Battery

Servicing of batteries is to be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries.

⚠ WARNING Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

Not for Reproduction

Servicing the Battery

If it is necessary to service the battery, proceed as follows:

1. Press and hold the control board OFF button.
2. Remove 15 Amp fuse from control board.
3. Service or replace battery as required. See *Battery* in *Final Installation Considerations* in the installation manual for specific battery needed.
4. Connect red battery cable to battery positive terminal (indicated by **POSITIVE**, **POS**, or (**+**)).
5. Connect black negative battery cable to negative battery terminal (indicated by **NEGATIVE**, **NEG**, or (**-**))..
6. Ensure hardware on both positive and negative battery terminals is secure.
7. Reinstall 15 Amp fuse in control board.
8. Press and hold the control board **AUTO** button.

DON'T POLLUTE. CONSERVE RESOURCES, RETURN USED BATTERY TO RECYCLING COLLECTION CENTER.

Charging the Battery

If it is necessary to charge the battery, proceed as follows:

1. Press and hold the control board OFF button.
2. Remove 15 Amp fuse from control board.
3. Disconnect negative battery cable from negative battery terminal (indicated by **NEGATIVE**, **NEG**, or (**-**)).

NOTICE Failure to disconnect negative battery cable will result in equipment failure.

- DO NOT attempt to jump start the generator.
- Damage to equipment resulting from failure to follow this instruction will void engine and generator warranty.

4. Charge battery with battery charger at 2 Amps until battery holds 12 Volts. DO NOT exceed 13.7 volts when charging.

⚠ **CAUTION** With the system switch set to **AUTO**, the engine could crank and start at any time without warning, resulting in minor or moderate injury.

- To prevent possible injury that could be caused by such sudden starts, always set the system switch to **OFF** if performing maintenance on the system.
- Remove the 15 Amp fuse before working on or around the generator or transfer switch.

5. Connect negative battery cable to negative battery terminal (indicated by **NEGATIVE**, **NEG**, or (**-**)).
6. Ensure hardware on both positive and negative battery terminals is secure.
7. Reinstall 15 Amp fuse in control board.
8. Press and hold the control board **AUTO** button.

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Fuel System Inspection and Maintenance

Natural Gas / Propane Fuel System

The fuel system installed on this industrial engine has been designed to various standards to ensure performance and reliability. To ensure compliance to these standards, follow the recommended maintenance schedule contained in this section.

Pressure Regulator Maintenance and Inspection

NOTICE The pressure regulator components have been specifically designed and calibrated to meet the fuel system requirements of the engine.

If the regulator fails to operate or develops a leak, it should be repaired or replaced with the OEM recommended replacement parts.

When inspecting the regulator, check for the following items:

- Check for any fuel leaks at the inlet and outlet fittings.
- Check for any fuel leaks in the regulator body.
- Check to ensure the regulator is securely mounted and the mounting bolts are tight.
- Check the regulator for external damage.

Mixer / Throttle Control Device Maintenance and Inspection

NOTICE The mixer and throttle body components have been specifically designed and calibrated to meet the fuel system requirements of the engine.

NOTICE A dirty air cleaner may significantly alter the mixer performance.

When inspecting the mixer and throttle body, check for the following items:

- Leaks at all fittings.
- Ensure the mixer and throttle body are securely mounted.
- Inspect air cleaner element according to the recommended maintenance schedule found in this section.
- Check fuel lines for cracking, splitting, or chaffing, Replace if any of these conditions exist.
- Check for leaks at the throttle body and intake manifold.

Exhaust System Maintenance and Inspection

When inspecting the exhaust system, check for the following items:

- Inspect exhaust manifold at the cylinder head for leaks and that all retaining bolts and shields (if used) are in place.
- Inspect manifold to exhaust pipe fasteners to ensure they are tight and that there are not exhaust leaks. Repair as necessary.
- Inspect oxygen sensor trical connector to ensure connector is seated and locker, check wires to ensure there is no cracking, splitting, chaffing, or burning. Replace as necessary.
- Inspect exhaust pipe connection for leaks. Repair as necessary.

Engine Exterior

Periodically inspect the engine exterior for contamination and potential damage from dirt, leaves, rodents, spider webs, insects, etc. and remove.

Not for Reproduction

When Calling for Assistance

You must have the following information at hand if it is necessary to contact a local service center regarding service or repair of this unit:

1. Obtain the unit Model Number and Serial Number from the unit ID label. See *Controls* for location of the label or refer to the information recorded on the inside front cover of the installation manual.
2. Obtain the engine identification numbers from the engine label. See the *Controls* section for location of this information.

Storage

The generator is designed for long term service as a backup generator. There is no need to take any storage precautions. However, if it becomes necessary to take the system out of service for an extended period, call Technical Services at **888 575-8226**, between 8:00 AM and 5:00 PM CT for specific recommendations.

Maintenance Chart

This maintenance schedule represents the manufacturer's recommended maintenance intervals to maintain proper engine/ equipment function. Federal, State, or Local regulations may require additional or more frequent inspection or maintenance intervals than those specified above. Check with the authority having jurisdiction for details.

Perform the following maintenance on the engine at the hours indicated and at equivalent hour intervals thereafter.

Maintenance	Interval Hours									
	After each use	1000	1500	2000	2500	3000	3500	4000	4500	5000
General Maintenance Section										
Visual check for fluid leaks	X									
Check engine oil level	X									
Check coolant level	X									
Change engine oil and oil filter	**Every 100 hours or Annually**									
Check fuel system for leaks	**Before and after any service or maintenance activity**									
Inspect accessory drive belts		X		X		X		X		X
Inspect electrical system wiring				X				X		
Inspect all vacuum lines and fitting				X				X		
Timing belt	**Contact customer service for details**									
Engine Coolant Section										
Clean debris from radiator core	**Every 100 hours or 60 days of operation**									
Change coolant - ethylene glycol 50-50 mixture w/ distilled water		X		X		X		X		X
Inspect coolant hoses		X				X				X
Replace coolant hoses and accessory drive belt	**Every 2,000 Hours or two years, whichever occurs first**									
Engine Ignition System										
Inspect battery case for leaks/damage		X		X		X		X		X
Inspect battery cables		X		X		X		X		X
Inspect all electrical connector retainer locks		X		X		X		X		X
Replace spark plugs			X			X			X	
Inspect crank sensor timing wheel	**Every 100 hours or Annually**									
Clean secondary ignition coil tower		X		X		X		X		X
Check spark plug wires				X						
Replace spark plug wires								X		
Fuel System Maintenance										
Inspect air cleaner	**Every 200 hours (or every 100 hours in severe environments) or Annually**									
Check fuel shut-off valve function				X				X		
Check fuel shut-off solenoid valve function				X				X		
Check air induction system				X				X		
Check intake manifold					X					X
Engine Exhaust System										
Inspect exhaust manifold and piping				X				X		
Check oxygen sensor connector				X				X		

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Troubleshooting

Problem	Cause	Correction
Engine is running, but no AC output is available.	1. Circuit breaker open or defective. 2. Fault in generator control panel. 3. Poor wiring connections or defective transfer switch.	1. Reset or replace circuit breaker. 2. Contact local service facility. 3. Check and repair.
Engine runs good at no-load but "bogs down" when loads are connected.	1. Short circuit in a connected load. 2. Generator is overloaded. 3. Shorted generator circuit. 4. Fuel pressure or mixture is incorrect. 5. Kinked fuel line.	1. Disconnect shorted electrical load. 2. Turn off one or more loads. 3. Contact local service facility. 4. See *Gaseous Fuel System* in the installation manual. 5. Remove kink. Replace if necessary.
Engine will not start; or starts and runs rough.	1. 15 Amp fuse missing or blown. 2. Fuel supply turned off or depleted. 3. Failed battery. 4. Fuel pressure is incorrect	1. Install (new) 15 Amp fuse. See *System Control Panel*. 2. Open fuel valve(s); check propane tank. 3. Replace battery. 4. See *Gaseous Fuel System* in the installation manual.
Engine shuts down during operation.	1. Fuel supply turned off or depleted. 2. Fault code displayed on controller.	1. Check fuel valves, fill propane tank. 2. Count blinks and refer to *Fault Detection System*.
Loss of power on circuits.	1. Generator circuit breaker is open. 2. Transfer switch problems.	1. Reset circuit breaker. 2. See transfer switch manual.

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U.S. EPA, and Briggs & Stratton Corporation Emissions Control Warranty Statement for Emergency Standby Engines

Your Warranty Rights And Obligations **February 2013**

General Information

The U.S. EPA, and Briggs & Stratton (B&S) are pleased to explain the emissions control system warranty on your Model Year 2013 - 2014 engine / equipment. In the U.S., new Emergency Standby Engines must be designed, built, and equipped to meet stringent emission standards. Engines less than 25 Hp must meet requirements of 40 CFR Part 1054. Engines greater than 25 Hp and less than 130 Hp must meet requirements of 40 CFR Part 1048. B&S must warrant the emissions control system on your engine / equipment.
See Definition of appropriate use of Emergency Standby below.
The emission-related warranty covers all components whose failure would increase an engine's non-evaporative emissions of any regulated pollutant referenced below.

Manufacturer's Warranty Coverage:

Briggs & Stratton warrants that the engine is free from defects in material and workmanship, and is also designed, built, and equipped to conform to applicable regulations under Section 213 of the Clean Air Act, from the time the engine is sold, until the expiration of its warranty period.
This warranty applies to all emission related engine components whose failure would cause engine exhaust emissions to be out of EPA compliance. Further, this warranty also applies to other engine components damaged due to the failure of any of these emissions related components.
If a warrantable emissions related component on your engine is defective, the part will be repaired or replaced by B&S at no cost to you including diagnosis, parts, and labor.
Warranty coverage period is five years from date of original purchase, and is offered to the original purchaser and each subsequent purchaser so long as Owner's Warranty Responsibilities are adhered to.

Owner's Warranty Responsibilities:

- Warranty claims shall be filed according to the provisions of the Briggs & Stratton Warranty Policy.
- An engine may not be warrantable if subjected to abuse, misuse, neglect, improper maintenance, unapproved modifications, accidents not caused by Briggs & Stratton engines or equipment, or by acts of God.
- Only those engines used as an Emergency Stationary Engine, as defined below, are warrantable.
- You are responsible for presenting your engine / equipment to a B&S distribution center, servicing dealer, or other equivalent entity, as applicable, as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days. If you have any questions regarding your warranty rights and responsibilities, you should contact B&S at 1-800-233-3723 or BRIGGSandSTRATTON.COM.
- If any components not scheduled for maintenance is repaired or replaced under this warranty, the new part will be warranted only for the remaining warranty period.
- If a warrantable component scheduled for maintenance fails prior to its first scheduled replacement, the part will be repaired or replaced by B&S at no charge to the owner. Any such component is only warrantable until the originally scheduled maintenance period has expired.
- Add on or modified parts that are not exempted by the EPA may not be used. The use of any non-exempted add on or modified parts by the owner will be grounds for disallowing a warranty claim. The manufacturer will not be liable to warrant failures or warranted parts caused by the use of a non-exempted add on or modified part.

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MANUFACTURER OF RECORD

CHONGQING PANDA MACHINERY is the Manufacturer of Record for all Environmental Protection Agency (EPA) compliance issues related to the use and performance of the engine.

Emergency Stationary Engine Definition

An Emergency Stationary Engine is defined as any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary engines used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary engines used to pump water in the case of fire or flood, etc. Stationary engines used for peak shaving are not considered emergency stationary engines. Stationary engines used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines. Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary engines in emergency situations. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. For owners and operators of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted above is prohibited.

Limited Warranty

Coverage*

Briggs & Stratton Power Products Group, LLC will repair or replace, free of charge, any part(s) of the equipment that is defective in material or workmanship or both. This warranty is effective for the time periods and subject to the conditions stated below. For all warranty service, find the nearest Authorized Service Dealer in our dealer locator map at BRIGGSandSTRATTON.COM.

THERE IS NO OTHER EXPRESS WARRANTY. WARRANTY COVERAGE FOR IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE WARRANTY PERIOD SET FORTH BELOW, OR TO THE EXTENT PERMITTED BY LAW. LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES ARE EXCLUDED TO THE EXTENT PERMITTED BY LAW.

Some states or countries do not allow limitations on how long an implied warranty lasts, and some states or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and/or the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state or country to country.*

* In Australia - Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. For warranty service, find the nearest Authorized Service Dealer in our dealer locator map at BRIGGSandSTRATTON.COM, or by calling 1300 274 447, or by emailing or writing to salesenquires@briggsandstratton.com.au, Briggs & Stratton Australia Pty Ltd, 1 Moorebank Avenue, NSW, Australia, 2170.

Warranty Period

PARTS	5 years †
LABOR	5 years †
TRAVEL	5 years † ‡

† Enclosure is warranted against surface rust and corrosion for the first year of the warranty period. Surface rust and corrosion is defined as any rust or corrosion that has penetrated the paint but has not penetrated through the metal substructure.

Enclosure is warranted against rust-through for the first two years of the warranty period. Rust-through is defined as rust or corrosion that has penetrated completely through the paint and metal substructure.

† Accessory parts have a separate warranty. Refer to the warranty included with the accessory part at purchase.

‡ Travel expenses are reimbursed as specified under the Briggs & Stratton Warranty Guidelines document to authorized Briggs & Stratton dealers for performing applicable warranty repair work.

The warranty period begins on the date of purchase by the first retail or commercial customer. **In order to ensure prompt and complete warranty coverage, REGISTER YOUR PRODUCT IN ONE OF THREE WAYS:**

1. **ONLINE AT BRIGGSANDSTRATTON.COM, OR**
2. **MAIL THE COMPLETED REGISTRATION CARD, OR**
3. **CALL 888-575-8226**

SAVE YOUR PROOF OF PURCHASE RECEIPT. IF YOU DO NOT PROVIDE PROOF OF THE INITIAL PURCHASE DATE AT THE TIME WARRANTY SERVICE IS REQUESTED, THE MANUFACTURING DATE OF THE PRODUCT WILL BE USED TO DETERMINE THE WARRANTY PERIOD.

Registration is not required to obtain warranty service.

Warranty terms continue on next page.

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About Your Warranty

Only authorized service dealers may perform warranty repairs. Most warranty repairs are handled routinely, but sometimes requests for warranty service may not be appropriate. For example, warranty service would not apply if equipment damage occurred because of misuse, lack of routine maintenance, and shipping, handling, warehousing or improper installation. Similarly, warranty coverage will not be provided if the manufacturing date or serial number(s) on the equipment has been removed or the equipment has been altered or modified. During the warranty period, the authorized service dealer, at its option, will repair or replace any part that, upon examination, is found to be defective under normal use and service. This warranty will not cover the following repairs due to:

1. Normal Wear and Maintenance: Outdoor Power Equipment and engines, like all mechanical devices, need periodic parts and service to perform well. This warranty does not cover repair when normal use has exhausted the life of a part or the equipment. Typical wear items include engine oil, oil gauges, o-rings, filters, fuses, spark plugs, anti-freeze, starting batteries, etc. Normal maintenance such as: adjustments, loose or leaking clamps or connections, installation or start-up operations, fuel system cleaning and obstruction due to contamination.
2. Installation, Operation, Maintenance and Storage: This warranty does not apply to equipment or parts that have been subjected to improper or unauthorized installation or alteration and modification, abuse, misuse, negligence, accident, overloading, overspeeding, improper maintenance, repair or storage so as to adversely affect its performance and reliability.
3. Enclosure is not warranted for surface rust or corrosion or complete rust-through that may result due to improper installation, damage to painted surfaces that compromise the paint's corrosion prevention properties, or if the unit is installed in environments that expose the generator to high levels of corrosive agents.

This warranty will not cover equipment used in:

1. Equipment used for prime power. For purposes of this warranty, Prime Power is defined as an application in which the generator is a source of power where no electrical power service is available from the UTILITY POWER GRID. If no UTILITY power is available, the generator is considered the prime power source.
2. Used, reconditioned, and demonstration equipment, or rental equipment. Rental use means any use of this product in a temporary or semi-permanently installed rental application. Once equipment has experienced rental use, it shall thereafter be considered rental equipment for purposes of this warranty.
3. Equipment used in life support applications.
4. Failures caused by any force majeure event or external force beyond the manufacturer's control or Act of God such as, but not limited to freezing, theft, fire, collision, wars or riots, hail, water or flood damage, tornados, hurricanes, or terrorist acts.
5. Use of non-original parts and non-authorized installation or warranty service by unauthorized dealers.
6. Rodent and/or insect infestations.

This warranty also does not include:

1. Any and all expenses incurred investigating performance complaints unless defective Briggs & Stratton materials and/or workmanship were the direct cause of the problem.
2. The cost of rental equipment used while warranty repairs are being performed (i.e., generators, pumps, etc.)

Warranty terms effective October 1, 2013.

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Product Specifications

30 kW

Rated Maximum Load Current (at 40°C/104°F, LP or NG):

	125 Amps at 1.0pf
Rated AC Voltage	120/240 Volts
Phase	Single phase
Rated Frequency	60 Hertz
Normal Operating Range	-20°F (-28.8°C) to 104°F (40°C)
Output Sound Level per ISO 3744	69 dB(A) at 23 ft. (7 m) at no load
	70 dB(A) at 23 ft. (7 m) at normal load
Shipping Weight	1,086 lb (493 kg)

This generator is rated in accordance with UL (Underwriters Laboratories) 2200 (stationary engine generator assemblies) and CSA (Canadian Standards Association) standard C22.2 No. 100-4 (motors and generators).

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Notes

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